IN THE CLAIMS:

1. (Original) A method for transmitting one or more symbols in a multiple antenna wireless communication system, said method comprising the step of:

diagonally loading subcarriers from said one or more symbols across a plurality of antennas in said multiple antenna wireless communication system.

2. (Original) The method of claim 1, wherein said one or more symbols are long training symbols based on a single-antenna long training symbol and wherein each subsequent subcarrier from said single-antenna long training symbol is positioned in a long training symbol for a logically adjacent antenna.

3. (Original) The method of claim 2, wherein said single-antenna long training symbol is an 802.11 a/g long training symbol.

4. (Original) The method of claim 1, wherein said one or more symbols are short training symbols based on a single-antenna short training symbol and wherein each subsequent subcarrier from said single-antenna short training symbol is positioned in a short training symbol for a logically adjacent antenna.

5. (Original) The method of claim 4, wherein said single-antenna short training symbol is an 802.11 a/g short training symbol.

6. (Original) The method of claim 1, wherein said multiple antenna wireless communication system is a MIMO-OFDM system.

7. (Original) The method of claim 1, further comprising the step of inserting one or more additional subcarriers in at least one of said plurality of symbols.

8. (Original) The method of claim 7, where said one or more additional subcarriers are inserted to ensure that any subcarrier that was nulled by said diagonal loading is surrounded

by subcarriers that are not nulled.

9. (Original) The method of claim 7, where said one or more additional subcarriers allow nulled subcarriers to be estimated using an interpolation-based channel estimation technique.

10. (Original) The method of claim 2, wherein a reduced number of subcarriers are inserted in said at least one of said plurality of long training symbols and wherein a first long training symbol and a second long training symbol are interchanged to position at least one non-nulled subcarrier on at least one side of a nulled subcarrier.

11. (Original) The method of claim 1, wherein said one or more symbols are a SIGNAL-field symbol.

12. (Original) The method of claim 11, wherein said SIGNAL-field symbol includes a system type indicator.

13. (Original) The method of claim 2, wherein a number of said long training symbols is a function of the number of transmitters.

14. (Original) The method of claim 1, further comprising the steps of:

diagonally loading a remainder of a header of a packet across said logically adjacent antennas; and

diagonally loading data sequences of said packet across said logically adjacent antennas.

15. (Original) The method of claim 1, wherein said plurality of antennas are logically adjacent.

16. (Original) The method of claim 1, whereby a lower order receiver can interpret said transmitted diagonally loaded symbols as a normal OFDM frame.

17. (Original) A method for generating a plurality of long training symbols in a multiple antenna wireless communication system, said method comprising the step of:

diagonally loading subcarriers from a single-antenna long training symbol across long training symbols associated with logically adjacent antennas in said multiple antenna wireless communication system;

nulling subcarriers in said plurality of long training symbols that are not diagonally loaded; and

inserting at least one additional subcarrier to ensure that a nulled subcarrier has at least one subcarrier located on each side of said nulled subcarrier.

18. (Original) The method of claim 17, wherein said single-antenna long training symbol is an 802.11 a/g long training symbol.

19. (Original) The method of claim 17, where said at least one additional subcarrier allows nulled subcarriers to be estimated using an interpolation-based channel estimation technique.

20. (Original) The method of claim 17, wherein a reduced number of subcarriers are inserted in at least one of said plurality of long training symbols and wherein a first long training symbol and a second long training symbol are interchanged to position at least one non-nulled subcarrier on at least one side of a nulled subcarrier.

21. (Original) A transmitter in a multiple antenna wireless communication system, comprising:

a plurality of transmit antennas, wherein subcarriers of one or more symbols are diagonally loaded across logically adjacent antennas.

22. (Original) The transmitter of claim 21, wherein said one or more symbols are long training symbols based on a single-antenna long training symbol and wherein each subsequent subcarrier from said single-antenna long training symbol is positioned in a long training symbol for a logically adjacent antenna.

23. (Original) The transmitter of claim 21, wherein said multiple antenna wireless communication system is a MIMO-OFDM system.

24. (Original) The transmitter of claim 21, wherein said one or more symbols are a SIGNAL-field symbol.

25. (Original) The transmitter of claim 21, wherein:

a remainder of a header of a packet are diagonally loaded across said logically adjacent antennas; and

data sequences of said packet are diagonally loaded across said logically adjacent antennas.

26. (Original) A method for transmitting one or more symbols in a multiple antenna wireless communication system, said method comprising the step of:

transmitting subcarriers from said one or more symbols using a plurality of antennas in said multiple antenna wireless communication system such that each of said subcarriers are active on only one of said plurality of antennas at a given time.

27. (Original) The method of claim 26, wherein said transmitting step further comprises the step of diagonally loading said subcarriers across said plurality of antennas.

28. (Original) The method of claim 26, wherein said plurality of antennas are logically adjacent.

29. (Original) A transmitter in a multiple antenna wireless communication system, comprising:

a plurality of transmit antennas for transmitting subcarriers from one or more symbols such that each of said subcarriers are active on only one of said plurality of antennas at a given time.

30. (Original) The transmitter of claim 29, wherein said subcarriers are diagonally loaded across said plurality of antennas.

31. (Original) A method for receiving one or more symbols on at least one receive antenna transmitted by a transmitter having a plurality of transmit antennas in a multiple antenna wireless communication system, said method comprising the step of:

aggregating subcarriers from said one or more symbols that were transmitted such that each of said subcarriers are active on only one of said plurality of antennas at a given time.

32. (Original) The method of claim 31, wherein said subcarriers are diagonally loaded across said plurality of antennas.

33. (Original) A receiver in a multiple antenna wireless communication system having at least one transmitter having a plurality of transmit antennas, comprising:

at least one receive antenna; and

an aggregator for aggregating subcarriers from one or more symbols that were transmitted such that each of said subcarriers are active on only one of said plurality of antennas at a given time.

34. (Original) The receiver of claim 33, wherein said subcarriers are diagonally loaded across said plurality of antennas.